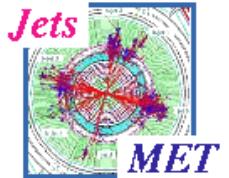




ATLAS CMS LHCb ALICE



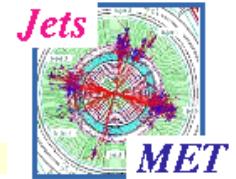
S.Abdullin



CURRENT STATUS OF MET



Naming Convention

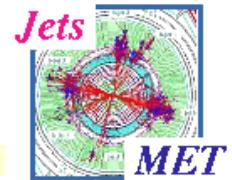


■ To set (and follow !)

- 👉 FNAL/UCSD splitting to remove (?)
- 👉 Sometimes “\results” sub-directory appears (FNAL)
- 👉 Avoid mixture of “_” and “-” at the same position
- 👉 Single file enumeration scheme, while exist 2 :
0_0, 0_1000, 0_2000 ... and _1, _2, _3
- 👉 Avoid name variation, only file number :
(jm02_hlt, jm02b_hlt)



HLT Data Used

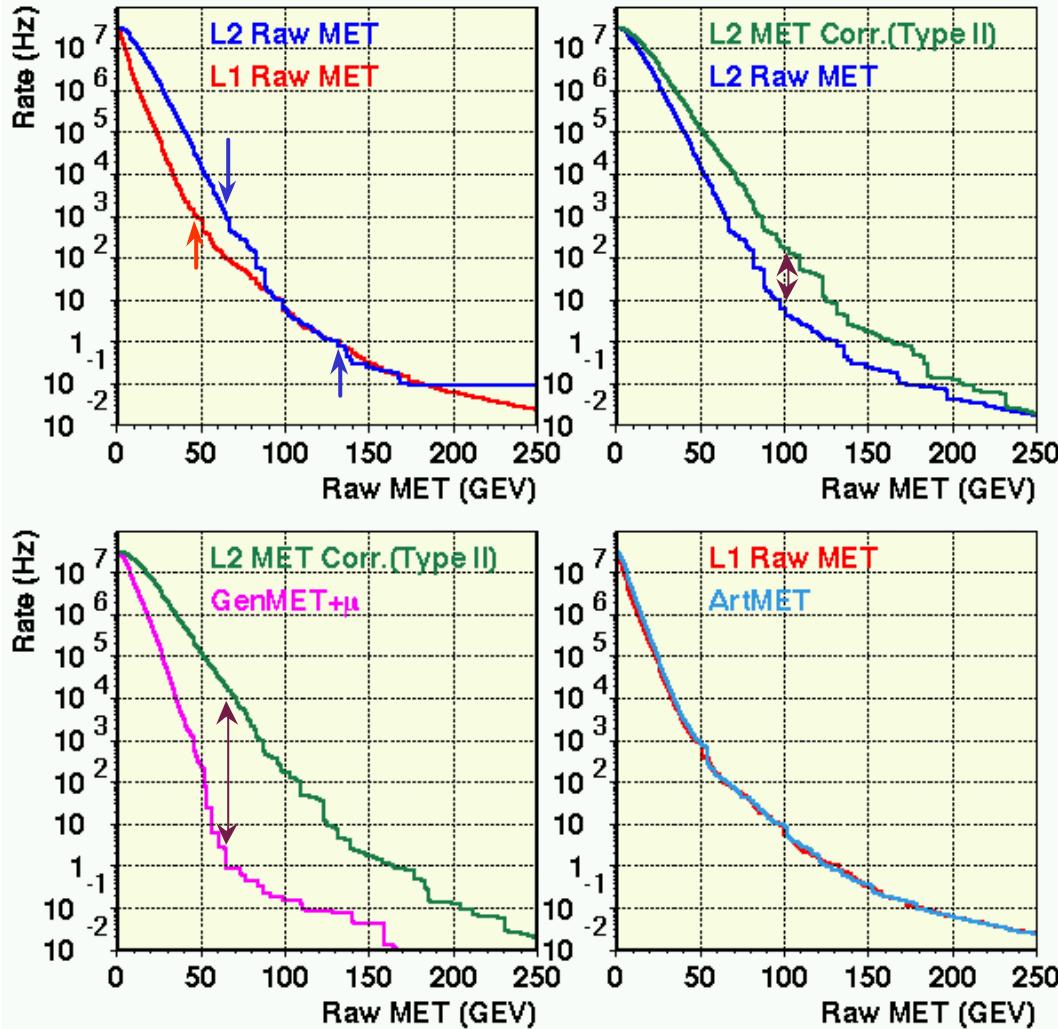
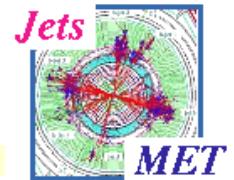


Low lumi (CERN) High lumi (FNAL)

	0-15 GeV	$\hat{P} < 15 \text{ GeV}$	
1)	92517 *	$\hat{P} < 15 \text{ GeV}$	67184 *
2)	48321		43500
3)	39478		46000
4)	0		57150
5)	2000		2000
6)	2000		2000
7)	770		2000
8)	2000		2000
9)	2000		18899
10)	0		9267
11)	8321		9818
12)	0		11241
13)	2000		2000
14)	2000		2000
15) 1000-1400	1290		2000



MET @ Low Luminosity



■ ORCA_6_1_0 (HF bug)

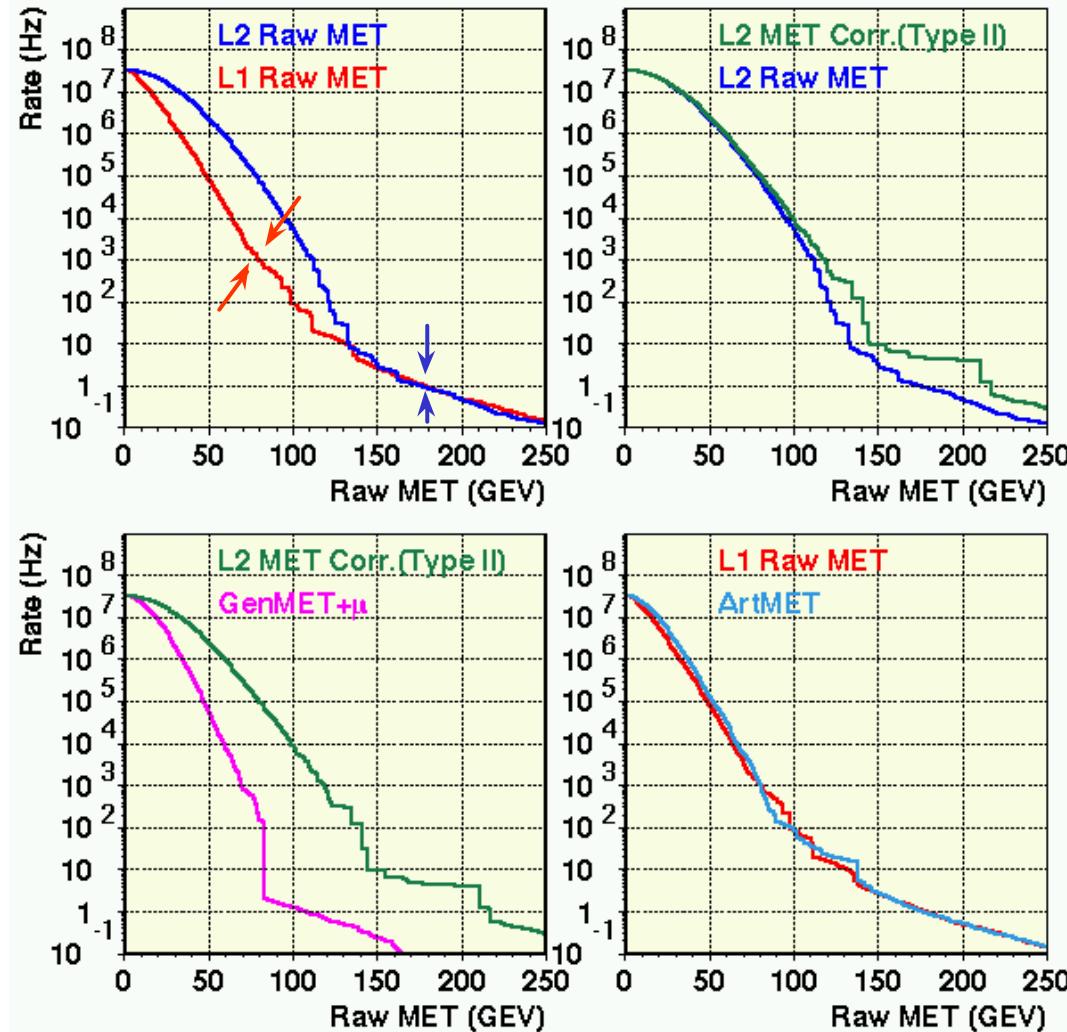
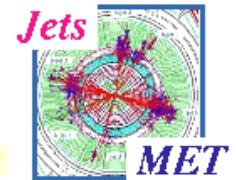
- ☞ HF tower eta position :
~half a tower shift to higher eta ...
- ☞ Low HF energy scale (factor ~ 1.8)

■ IN 2002/015 (low lumi) :

- ☞ L1 MET rate ≈
L2 MET rate = 1 kHz
at ~ 65 GeV



MET @ High Luminosity



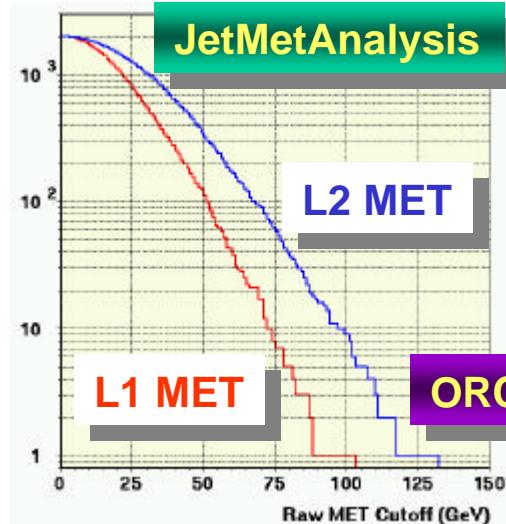
■ ORCA_6_1_0
(HF bug)

☞ HF tower eta position :
~half a tower shift to
higher eta ...

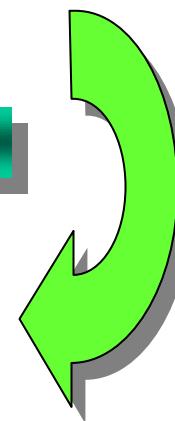
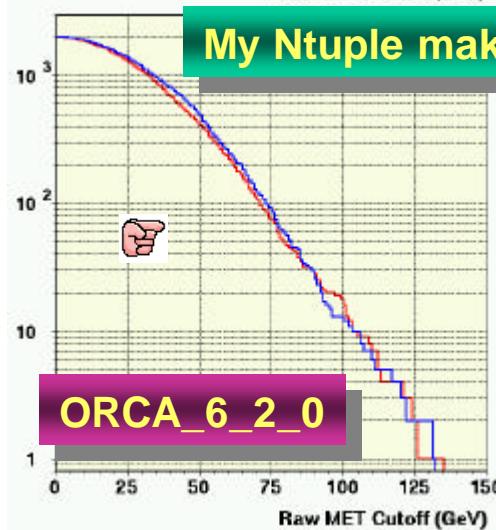
☞ Low HF energy scale
(factor ~ 1.8)



Probing Data Sample : 80-120 GeV



Qualitative plots,
not translated to rate
(no weights, just events)



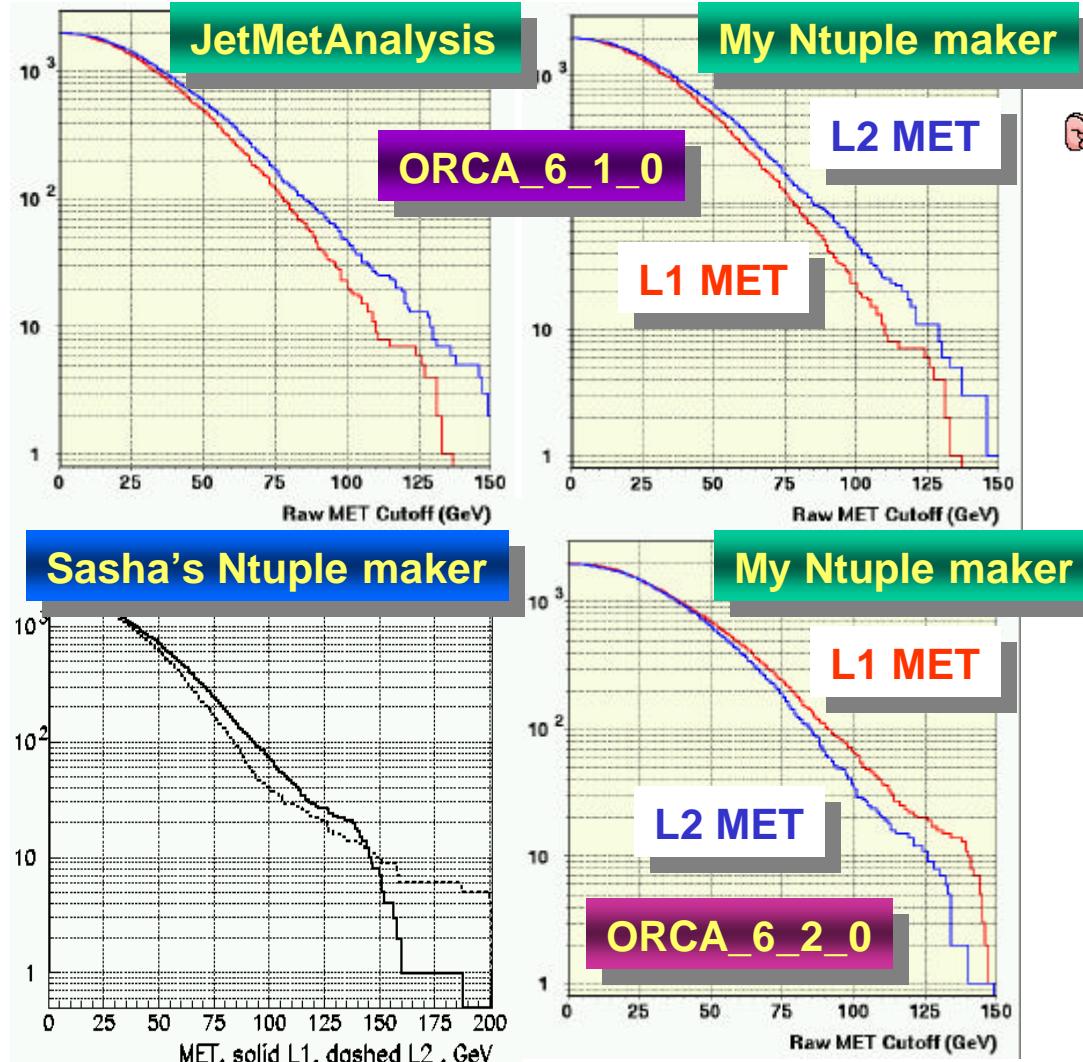
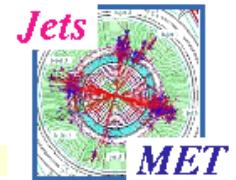
L2 MET rate
slightly increases,

L1 MET –
increases
significantly,
by a factor of
~ 5-7

- ORCA_6_2_0
(HF bug fixed)
- HF tower eta position
and energy scale
fixed “on the fly”
in HcalRecHit and
HcalTrigPrim ...



Probing Data Sample : 170-230 GeV



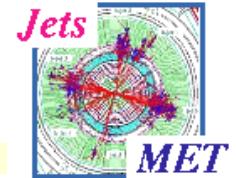
Qualitative plots,
not translated to rate
(no weights, just events)

L2 MET rate
~ stable,

L1 MET rate
Increases by
a factor of ~ 2-3



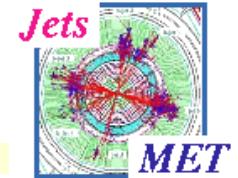
Current Situation in ORCA 6_2_0



- HF bug fixed in HcalTrigRec and HcalTrigPrim
 - 👉 Position and Energy (E_t) return corrected values
- L1CaloTrigger : new tag Dasu15July2002
 - 👉 To correct forward jets eta
 - 👉 L1 MET looks OK without correction ...
 - 👉 New HF boundaries are hard-coded as it was before
 - 👉 We (I) have to make these boundaries publicly accessible via HcalTowerBase method in the future ...



Pileup Subtraction Effect on MET (I)

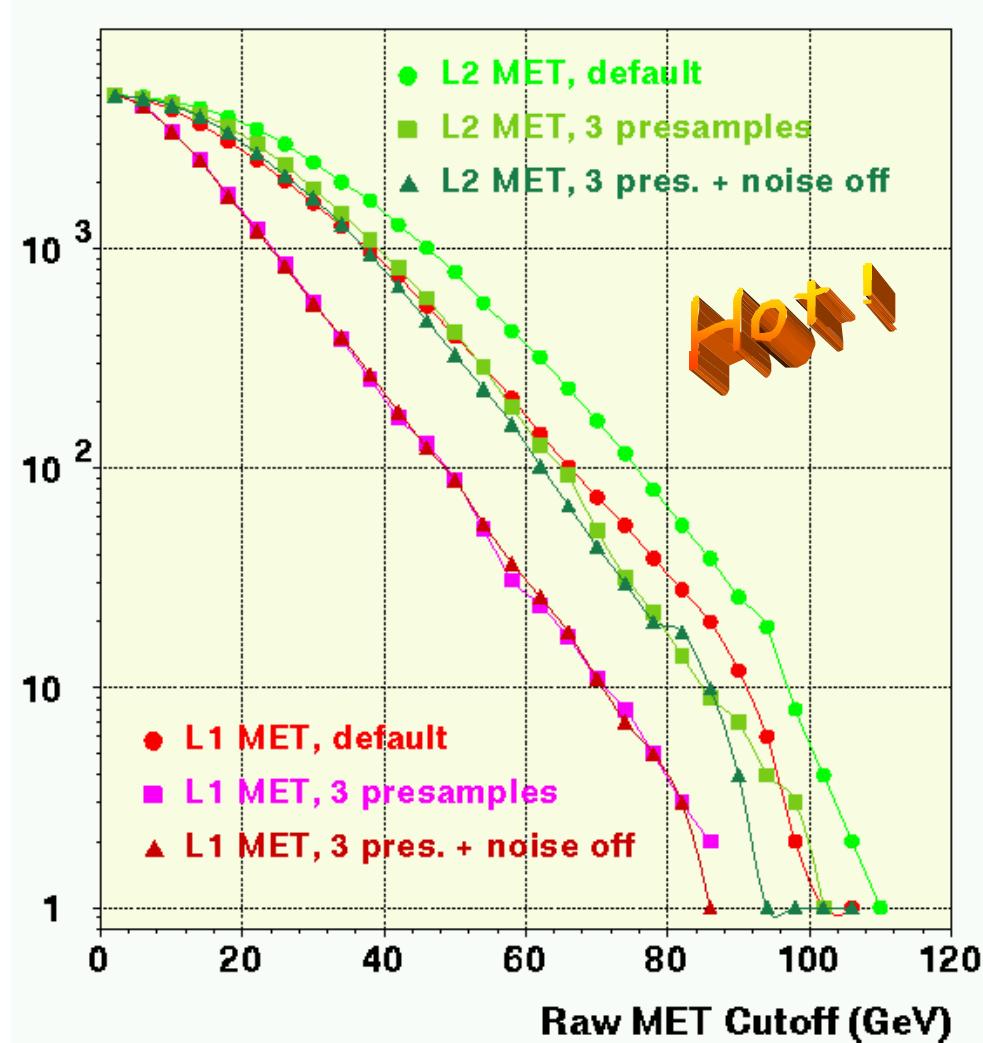
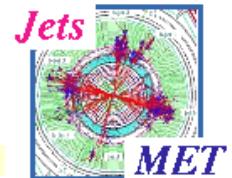


- Minimum bias sample (hlt0-15, 5000 ev)
digitized in various ways :
 - ☞ default/standard (without pre-samples)
 - ☞ with 3 pre-samples in HB/HE/HO/HF
both in DAQ and TPG paths
 - ☞ Idem + noise is off

- One might expect a substantially lower scalar ET sum ...
 - ☞ Pileup yields ~ 500-1000 GeV of ET sum @ high lumi
 - ☞ MET rate (both L1 and L2) is expected to be lower



Pileup Subtraction Effect on MET (II)



ORCA_6_2_0

- ☞ Both L1 and L2 MET rates became lower after simple pileup subtraction
- ☞ Switching off the noise (in addition to pre-samples) doesn't produce a significant effect ...
- ☞ Qualitative plots, not translated to rate (no weights, just events)